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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/616,408	07/14/2000	David N Horn	Horn 10-2-3	6913

7590 10/23/2003

Docket Administrator Rm 3C 512
Lucent Technologies Inc
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EXAMINER	
NGUYEN, ALAN V	
ART UNIT	**PAPER NUMBER**
2662	

DATE MAILED: 10/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/616,408	HORN ET AL.	
	Examiner	Art Unit	
	Alan Nguyen	2662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-4 and 8-22 is/are rejected.

7)☒ Claim(s) 5-7 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 7/14/2000 is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Vanhoof et el (US 6,298,049), herein Vanhoof.

Vanhoof shows in Figure 2 a grant generator apparatus with a first and second grant table, T1 and T2. As disclosed on column 6, lines 12-16, both grant tables are used as memories that are filled with terminal identifiers. The terminal identifier corresponds to a grant and each is assigned a portion of the overall upstream capacity for upstream transmission ***(storing grants corresponding to a first-size and second-size of said available transmission channel bandwidth)***. The grant tables are coupled to a filling device ***(grant distributor)*** that calculates the order of grants and distributes them into the tables in order to obtain a fair share of upstream capacity of the common link over different network terminals ***(distributing grants in a predetermined pattern)***, as explained on column 6, lines 12-16. A grant generator GRANT ***(grant generator)*** is also shown in figure 2.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 1-4, 8-14, and 17-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckland et al (US 6,064,652) in view of Vanhoof et al (US 6,298,049), herein Buckland.

Regarding claims 1 and 10, Buckland shows in Figure 5 the use of a grant generator (element 720) ***(grant generator)*** and a first grant table (element 700). Buckland fails to disclose the use of multiple grant tables and the corresponding grant distributor for distributing grants to the tables according to a predetermined pattern. Vanhoof teaches in Figure 2 a grant generator apparatus with a first and second grant table, T1 and T2. As disclosed on column 6, lines 12-16, both grant tables are used as memories that are filled with terminal identifiers. The terminal identifier corresponds to a grant and each is assigned a portion of the overall upstream capacity for upstream transmission ***(storing grants corresponding to a first-size and second-size of said available transmission channel bandwidth)***. The grant tables are coupled to a filling device ***(grant distributor)*** that calculates the order of grants and distributes them into the tables in order to obtain a fair share of upstream capacity of the common link over different network terminals ***(distributing grants in a predetermined pattern)***, as explained on column 6, lines 12-16. It would have been obvious to one having ordinary

skill in the art at the time the invention was made for Buckland's arrangement to utilize multiple grant tables for the grant generator, with the tables being coupled to the filling device by the address counter, the motivation being an improvement in the system efficiency and performance by enabling both the grant distributor and the scanning device/multiplexer to work concurrently.

In regard to claim 2, with the features in parent claim 1 addressed above, Buckland further shows the apparatus as a passive optical network in figure 1 of Buckland ***(network is a passive optical network, PON)***.

In regard to claim 3, with the features in parent claim 2 addressed above, Buckland further clearly shows an ATM passive optical network in figure 1 of Buckland, and further explains on column 4, lines 60-61 of Buckland that the system provides for the transport of ATM cells ***(PON is an ATM-PON)***.

In regard to claim 4, with the features in parent claim 1 addressed above, column 5, lines 44-47 of Vanhoof further states that a filling device ***(clock divider)*** that has outputs coupled to the write inputs of the grant table memories T1 and T2 ***(providing first number of grant selections to first table and at least a second number of grant selections to other table, first and second selections corresponding to first and second number of grants)***.

In regard to claim 8, with the features in parent claim 1 addressed above, column 2, lines 27-32 of Buckland states that grants are allocated in a manner to ensure Quality of Service (QoS) for each connection. The QoS defines basic parameters such as cell loss rate and average delay. Buckland further discloses a method on column 8, lines 1-

8 that utilizes an algorithm that in the event of a connection failure, an appropriate number of grant table entries corresponding to that connection are removed ***(control logic operable to alter slots in one or more grant tables based on receipt of a triggering parameter)***.

In regard to claim 9, with the features in parent claim 8 addressed above, Buckland further discloses an ATM passive optical network shown in figure 1, and further explains on column 4, lines 60-61 of Buckland that the system provides for the transport of ATM cells ***(PON is an ATM-PON)***.

In regard to claim 11, with the features in parent claim 10 addressed above, column 6, lines 27-31 of Vanhoof states that a predetermined order of grant identifiers are inputted into the grant table in a way that each network terminal can transmit upstream data bursts approximately at a constant data rate. This predetermined order can possibly allocate slots for low bandwidth upstream transmission ***(predetermined pattern is selected to substantially accommodate low bandwidth requests)***.

In regard to claims 12 and 14, with the features in parent claim 10 addressed above, Buckland further discloses an ATM passive optical network shown in figure 1 of Buckland, and further explains on column 4, lines 60-61 of Buckland that the system provides for the transport of ATM cells ***(PON is an ATM-PON)***.

In regards to claim 13, with the features in parent claim 10 addressed above, figure 2 of Vanhoof shows a diagram where the grant distributor FILL, the grant tables T1, T2, are ultimately looped back to each other through the transceiver TRX ***(grant table, grant distributor recursively coupled)***. The apparatus of Buckland in view of

Vanhoof can send grants of different bandwidths into the grant tables, thereby being able to produce finer granularity grants ***(to produce finer granularity at subsequent levels)***.

In regards to claim 17, with the features in parent claim 10 addressed above, Buckland further discloses a method on column 8, lines 1-8 that utilizes an algorithm that in the event of a connection failure, an appropriate number of grant table entries corresponding to that connection are removed. This shows that the table is updated ***(grant table is updated upon a change in end user connections at ATM-PON)***.

In regards to claim 18, with the features in parent claim 10 addressed above, column 2, lines 27-32 of Buckland states that grants are allocated in a manner to ensure Quality of Service (QoS) for each connection. The QoS defines basic parameters such as cell loss rate and average delay. Buckland further discloses a method on column 8, lines 1-8 that utilizes an algorithm that in the event of a connection failure, an appropriate number of grant table entries corresponding to that connection are removed ***(control logic operable to alter slots in one or more grant tables based on receipt of a triggering parameter)***.

Regarding claim 19, Buckland shows in figure 5 the use of a grant generator (element 720) ***(grant generator)*** and a first grant table (element 700). Buckland shows in figure 1 the apparatus as a passive optical network. Buckland fails to disclose the use of multiple grant tables and the corresponding grant distributor for distributing grants to the tables according to a predetermined pattern. Vanhoof teaches the use of multiple grant tables for efficiency, as clearly shown in figure 2, elements T1 and T2. As

disclosed on column 6, lines 12-16, both grant tables are used as memories that are filled with terminal identifiers in a calculated order done to obtain a fair share of upstream capacity of the common link over different network terminals ***(storing grants corresponding to a first-size and second-size of said available transmission channel bandwidth)***The grant tables are coupled to a filling device that distributes grants in a predetermined pattern, as explained on column 6 lines 12-16. Vanhoof also discloses on column 5, lines 2-6 that the network terminals are informed about the assignment of upstream timeslots via grant messages that are downstream broadcasted by the main station ***(distributing grants downstream to ONT units coupled to PON)*** Vanhoof also discloses column 6, lines 45-54 how grants are scanned from grants tables 1 and then subsequently grant table 2 ***(grants being distributed over a complete grant cycle)***. It would have been obvious to one having ordinary skill in the art at the time the invention was made for Buckland's arrangement to utilize multiple grant tables for the grant generator, with the capability to contain different bandwidths in the grant tables, the motivation being an improvement in the system efficiency and performance by enabling both the grant distributor and the scanning device/multiplexer to work concurrently.

In regard to claim 20, with the features in parent claim 19 addressed above, Buckland further discloses a method on column 8, lines 1-8 that utilizes an algorithm that in the event of a connection failure, an appropriate number of grant table entries corresponding to that connection are removed. This shows that the table is updated ***(grant table is updated upon a change in end user connections at ATM-PON)***.

In regard to claim 21, with the features in parent claim 19 addressed above, figure 2 and column 5, lines 44-47 of Vanhoof shows a filling device ***(clock divider)*** that has outputs coupled to the write inputs of the grant table memories T1 and T2 ***(providing first number of grant selections to first table and at least a second number of grant selections to other table, first and second selections corresponding to first and second number of grants)***.

In regard to claim 22, with the features in parent claim 20 addressed above, Vanhoof shows in figure 2 a diagram where the grant distributor FILL, the grant tables T1, T2, are ultimately looped back to each other through the transceiver TRX ***(grant table, grant distributor recursively coupled)***. The apparatus of Buckland in view of Vanhoof can send grants of different bandwidths into the grant tables, thereby being able to produce finer granularity grants ***(to produce finer granularity at subsequent levels)***.

5. Claims 15 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckland in view of Vanhoof in further view of Quayle (US 5,912,998).

Regarding claim 15, Buckland in view of Vanhoof shows in Figure 5 the use of a grant generator (element 720). Buckland in view of Vanhoof fails to disclose the components used to carry out the functions. Quayle teaches the use application specific integrated circuits (ASICs) in the head end ***(grant generator)*** of the passive optical network as disclosed on column 4, lines 57-60 ***(medium selected from the group consisting of FPGA and ASIC)***. It would have been obvious to one having ordinary

skill in the art at the time the invention was made for the apparatus of Buckland in view of Vanhoof to utilize ASIC technology, the motivation being the capability of increased performance and speed though the preferable use of switching by hardware.

In regard to claim 16, with the features in parent claim 15 addressed above, Vanhoof shows in figure 2 and on column 5, lines 44-47 a filling device ***(clock divider)*** that has outputs coupled to the write inputs of the grant table memories T1 and T2 ***(providing first number of grant selections to first table and at least a second number of grant selections to other table, first and second selections corresponding to first and second number of grants)***.

Allowable Subject Matter

6. Claims 5, 6, and 7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

The following patent is cited to show the state of the art with respect to passive optical networks and bandwidth allocation using grants:

US Patent (6,424,656) to Hoebeke

US Patent (6,570,886) to De Groote et al

US Patent (6,141,323) to Rusu et al

IEEE article to Kim

EPO Patent (EP000565739A1) to Glade et al

The following patent is cited to show the state of the art with respect to the use multiple grant tables:

US Patent (5,481,680) to Larson et al

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alan Nguyen whose telephone number is 703-305-0369. The examiner can normally be reached on 8am-5pm ET.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on 703-305-4798. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4700.

AVN
October 2, 2003

RICKY NGO
PRIMARY EXAMINER